Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claims 1-21 (Canceled)

22. (New) A virtual substrate comprising a device film, a handle substrate, and a material located on a back surface of the handle substrate, wherein: (1) a difference in a coefficient of thermal expansion (CTE) between the material and the handle substrate is of a same sign as a difference in a CTE between the device film and the handle substrate; (2) the material is selected to control a bow of the virtual substrate over a given temperature range.

23. (New) The virtual substrate of claim 22, wherein the material is deposited on the back surface of the handle substrate prior to the formation of the virtual substrate.

24. (New) The virtual substrate of claim 22, wherein the material is deposited on the back surface of the handle substrate after the formation of the virtual substrate,

25. (New) The virtual substrate of claim 22, wherein the material comprises a strain compensation layer deposited on the back surface of the handle substrate.

26. (New) The virtual substrate of claim 25, wherein the device film comprises a semiconductor material suitable for fabrication of optoelectronic devices.

27. (New) The virtual substrate of claim 26, wherein the device film comprises germanium or a compound semiconductor material and the handle substrate comprises a silicon, glass, quartz or sapphire substrate.

28. (New) The virtual substrate of claim 27, wherein the strain compensation layer comprises a semiconductor layer.

29. (New) The virtual substrate of claim 28, wherein the device film is selected from Ge, GaN, GaAs and InP films, the handle substrate comprises a silicon substrate and the strain compensation layer comprises a Ge layer.

30. (New) The virtual substrate of claim 25, wherein at least one of the strain compensation layer thickness, material and deposition temperature is selected to minimize a bow of the virtual substrate over the given temperature range.

31. (New) A virtual substrate comprising a device film, a handle substrate, and a material located on a back surface of the handle substrate, wherein: (1) a difference in a coefficient of thermal expansion (CTE) between the material and the handle substrate is of a same sign as a difference in a CTE between the device film and the handle substrate; (2) the material is selected such that at a first temperature a strain energy in the material and the device film is matched.

32. (New) The virtual substrate of claim 31, wherein the material is deposited on the back surface of the handle substrate prior to the formation of the virtual substrate.

33. (New) The virtual substrate of claim 31, wherein the material is deposited on the back surface of the handle substrate after the formation of the virtual substrate.

34. (New) The virtual substrate of claim 31, wherein the material comprises a strain compensation layer deposited on the back surface of the handle substrate.

35. (New) The virtual substrate of claim 34, wherein the device film comprises a semiconductor material suitable for fabrication of optoelectronic devices.

36. (New) The virtual substrate of claim 35, wherein the device film comprises germanium or a compound semiconductor material, the handle substrate comprises a silicon, glass, quartz or sapphire substrate.

37. (New) The virtual substrate of claim 36, wherein the strain compensation layer comprises a semiconductor layer.

38. (New) The virtual substrate of claim 29, wherein the device film is selected from Ge, GaN, GaAs and InP films, the handle substrate comprises a silicon substrate and the strain compensation layer comprises a Ge layer.

39. (New) The virtual substrate of claim 34, wherein at least one of the strain compensation layer thickness, material or deposition temperature is selected such that at a first temperature, the strain energy in the material and the device film is matched.

40. (New) A method for making a virtual substrate, comprising: (1) bonding a device substrate to a handle substrate; (2) thinning the device substrate to form a device film on a front surface of the handle substrate, thus forming a virtual substrate; (3) forming a material on a back surface of the virtual substrate that possesses a coefficient of thermal expansion such that a CTE difference between the material and the handle substrate is of a same sign as a CTE difference between the device film and the handle substrate.

41. (New) The method of claim 40, further comprising ion implanting a first side the device substrate prior to bonding the device substrate to the handle substrate.

42. (New) The method of claim 41, wherein the step of thinning comprises thinning the device substrate by exfoliating a device film from the first side of the device substrate.

43. (New) The method of claim 40, wherein the material is deposited on the back surface of the handle substrate prior to the formation of the virtual substrate.

44. (New) The method of claim 40, wherein the material is deposited on the back surface of the handle substrate after the formation of the virtual substrate.

45. (New)The method of claim 40, wherein the material comprises a strain compensation layer deposited on the back surface of the handle substrate.

46. (New) The method of claim 45, wherein the device film comprises a semiconductor material suitable for fabrication of optoelectronic devices.

47. (New) The method of claim 46, wherein the device film comprises germanium or a compound semiconductor material, the handle substrate comprises a silicon, glass, quartz or sapphire substrate, and the strain compensation layer comprises a semiconductor layer.

48. (New) The method of claim 47, wherein the device film is selected from Ge, GaN, GaAs and InP films, the handle substrate comprises a silicon substrate and the strain compensation layer comprises a Ge layer.

49. (New) The method of claim 45, wherein at least one of the strain compensation layer thickness, composition and deposition temperature is selected to minimize a bow of the virtual substrate over the given temperature range.

50. (New) The method of claim 40, further comprising forming an optoelectronic device on the device film.